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ABSTRACT

This paper examines the phenomenon of salary compression (the demand by newly hired university faculty members for salaries that approach or exceed those of existing faculty at the same or higher ranks) and reports on a phone survey of 10 university provosts. It presents methods to determine if salary compression exists and its extent. Considered first are the justification of professional maturity as a measure of faculty capability and salary, market conditions, and the pervasiveness of salary compression over the past decade. A two-phase approach to diagnosing salary compression is recommended, including examining salary consistency with external labor markets and examining internal salary consistency. Comparison of salary compression at Virginia Polytechnic Institute and State University with peer institutions is reported. The survey of provosts at 10 major research universities across the nation found salary compression most common in business, engineering, and the hard sciences. The most common solution reported was the allocation of more funds to correct resulting salary inequities. Includes 11 references. (DB)

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Diagnosing and Dealing with Salary Compression

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#25.

Diagnosing and Dealing With Salary Compression

Abstract

Newly hired faculty members in certain disciplines demand and receive salaries that approach or exceed those of existing faculty at the same or higher professional rank. This phenomenon is often referred to as salary compression. This paper presents methods used to determine if salary compression exists and the extent to which it exists. In addition, the results of a phone survey of university provosts provides information on how university administrators address the issue of salary compression.

Introduction

If it is assumed that faculty capability is basically tied to professional maturity, then internal average salary structures should exhibit patterns that increase with professional maturity (measured using rank and time in rank). Salary compression occurs when salary structures are not proportional to professional maturity. It should be noted that salary compression is not by definition a problem. There are a number of situations that may result in compressed salaries that are very appropriate. One of the more obvious examples that might result in salary compression would be rewarding junior faculty members that are very strong. While there may be rational explanations for why salary compression exists, it should be noted that the faculty members that receive the compressed salaries will be less likely to feel that these reasons are valid. Therefore, reduced morale and other negative side effects will probably result even when the salary compression is justifiable.

Three main themes are presented to set the stage for discussing salary compression. The first theme expands upon the definition of salary compression and justifies the use of professional maturity as a measure of faculty capability or as a predictor of salary. The second theme takes a closer look at 'market conditions' and the final theme provides a feel for the pervasiveness of the problem of salary compression.

Definition and Justification:

According to Hansen (1988a), salary systems fall on a continuum ranging from a structured system where salary is based solely on professional maturity (measured by rank and time in rank) to an unstructured system based on merit. Most salary systems are a combination of these two systems. Strohm (1988) suggests that even though merit pay has recently "come to the fore" it has long been a basis for salary systems. He further suggests that marketplace adjustments are just as common as these merit-based adjustments.

If the above components are combined, the resulting model is one that bases salary systems on three components: professional maturity, merit, and market conditions. For example, Botsch

and Folsome (1989) write of the experience of a small university that adopted a system where merit counts for approximately 40% of the raise; professional maturity counts for approximately 15% of the raise; and market conditions count for the remaining 45% of the raise. The system developed and used by the Office of Institutional Studies at the University of Maryland, College Park (1990) predicts expected salary from rank/discipline combinations. This system relies heavily on a merit component to explain unexpected salaries. The system used for California institutions of higher education uses a market component to determine the overall percent increase in salary that a given institution will receive and a merit component to determine the actual percent increase that a given faculty member will receive (California Postsecondary Education Commission, 1990).

Even though salary structures tend to be based on three main components: professional maturity, merit, and market conditions, research suggests that these components become institutionalized in discipline and measures of professional maturity such as rank or time in rank (McLaughlin, Montgomery, and Maham, 1979 and Braskamp and Johnson, 1978). Therefore, these variables (discipline, rank, and time in rank) are used as a basis for diagnosing salary compression.

Market Conditions:

While salary compression is an internal problem to a given campus, it can be driven by external market conditions. Salary compression results from hiring new faculty at salaries in excess of those paid to existing faculty at the same or higher ranks or by administering raises that cause a given faculty member's salary to exceed the salary of faculty at the same and higher ranks. Each of these situations is driven by the external market. In the first case, the market sets the salary that a faculty member is willing to accept. In the second case, the market sets the salary that the faculty member could receive if he or she chose to accept a new position, and therefore determines the amount of the raise that the individual would have to receive in order to be remain in his or her current position.

Other situations occur where there are large fluctuations in the availability of external funds. Those promoted or hired in "good" years have salaries larger than they would have if they had been promoted or hired in a "bad" year. The result of one or more "bad" years can cause deviations in the salary structure that are not a result of merit. Deviations are often related to the geographic diversity that can be found in an external labor sub-market. For example, the economic down-turn or the election of a new governor experienced by one state may have limited impact on other states.

According to Breneman and Youn (1988), supply and demand is fed by multiple, overlapping labor markets that can generally be categorized as either internal or external. Internal markets are found within organizations (such as a campus or university system) and tend to be comprised of "good jobs, stable employment, and promotional hierarchies." External markets are made up of the broader industry that competes with the internal market for labor. External labor markets tend to "price and allocate labor on the basis of direct economic relationships such as competition." Although an internal market offers benefits beyond those of mere compensation, employees are at risk of being recruited by external markets if the compensation offered is attractive enough to persuade them to leave their current job.

According to Hansen (1988b), there are three main components around which the external labor markets form; teaching, research, and extension. Those institutions that have similar levels of these components form into sub-markets that become the external labor markets for the diverse types of colleges and universities that exist. It is important that the institutions that comprise this sub-market are used as comparators.

Pervasiveness:

According to Blum (1989), salary compression has become more common in the last decade and has become "increasingly familiar and troublesome" across the nation in the last few years. A survey conducted by the American Assembly of Collegiate Schools (1990) of almost 500 business schools found that in almost every discipline, institutions paid higher salaries to new recruits than to faculty with more seniority. As a result of this compression, business schools are experiencing

higher levels of turn-over as faculty members leave in search of higher salaries that are equivalent to what new hires are making.

Compression can occur at all ranks. For instance, the aforementioned survey noted that new full professors in finance earned, on average, $81,400 while the average earnings of full professors in finance was only $65,100. The same is true for faculty just receiving doctorates and assistant professors in finance. New finance doctorates earned $53,000 on average while assistant professors averaged only $49,000.

Problems associated with salary compression include reduced morale, faculty turn-over, higher complaint levels, and less willingness to serve on faculty committees. Because salary compression is "simply an issue of supply and demand," (Blum, 1989) it is expected to worsen as the projected shortage of doctoral graduates in the twentieth century becomes a reality.

Methodology

When dealing with salary compression, two questions must be addressed. 1) How to diagnose salary compression? and 2) How to deal with salary compression once it is found? A two-phase approach is recommended for diagnosing salary compression. The first phase focuses on salary consistency with external labor markets while the second phase focuses on internal salary consistency. In response to the second question, results of a telephone survey of provosts from ten institutions that are part of the external sub-market of Virginia Polytechnic Institute and State University (Virginia Tech) are presented. This telephone survey addressed the issue of how one might deal with salary compression.

Diagnosing Salary Compression:

In phase one a comparison of salary ratios is made by rank/discipline combinations for the external labor market group and for Virginia Tech. Salary ratios for the sub-market used were

calculated based on a subset of the Fall 1989 Oklahoma State Faculty Salary Survey.[1] Salary ratios are calculated by dividing the average salary for a lower rank in a given discipline (CIP code) by the average salary at the higher rank in the same discipline. These ratios are then used to represent the magnitude of salary compression found at a national level in various disciplines.

Comparable salary ratios are calculated for Virginia Tech as well. This allows a comparison between the given institution and its labor sub-market. The comparison is made for two main purposes: 1) to determine the magnitude of salary compression in a specific discipline at a given university and 2) to determine how this level of salary compression compares to that found for a set of peer institutions.

In phase two, information focuses solely on the internal situation at Virginia Tech. Faculty salaries by time within a given rank are compared within colleges and for the university as a whole. In addition, compression measures are compared over a nine-year period to determine what trends might exist.

The following sections give more detail on how to derive and display information related to salary compression by giving examples of the procedures used at Virginia Tech. The first section focuses on external consistency: how Virginia Tech compares to its peers. The second section focuses on internal consistency: how colleges (or departments) within an institution compare to each other.

Phase One: External Consistency

The comparison of local conditions with those at comparable institutions provides an awareness of the market position of the institution in specific disciplines. Compression ratios are calculated by dividing first entering assistant professor average salaries by various reference salaries.

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[1] This subset was obtained from Oklahoma State University via a special request.

Both average assistant professor and average associate professor salaries were used as reference salaries.

Comparison with peer universities (those selected as belonging in the labor sub-market) showed that, for the most part, Virginia Tech has less of a salary compression problem than its peers. Information such as this assists key administrators in understanding the market position of certain disciplines. If the ratio for these areas is less than one or less than that of their peers, there is a little more room for maneuvering than if the ratio is substantially higher than the peer ratio and well over one.

Figure 1 provides a graphical depiction of salary compression levels found within a given college at Virginia Tech and that found among a set of Virginia Tech's peers. If the salary ratio is over one, assistant or associate professors are receiving a lower average salary than new assistant professors. This could be true for either the given institution or the group of peers. Therefore, these ratios indicate the magnitude of the problem. Figure 1 suggests that there is a compression problem at the beginning assistant to assistant level for both Virginia Tech and its peers in department one and to a lesser degree for the peer university departments three and eight. A compression problem appears to exist for Virginia Tech at the beginning assistant to associate level in department three.

These graphs also provide comparative information. Where the ratio for Virginia Tech is lower than that of the peers, it indicates that while a problem may exist at this institution (in that the ratio may be greater than or close to one), the problem is not as large as that which exists at peer institutions. In the Beginning Assistant to Assistant graph, Virginia Tech's peers have a more critical salary compression problem than that of Virginia Tech in departments one, three, six, and eight, while Virginia Tech's compression problem is more serious than that of its peers in departments two, four, five, and seven.

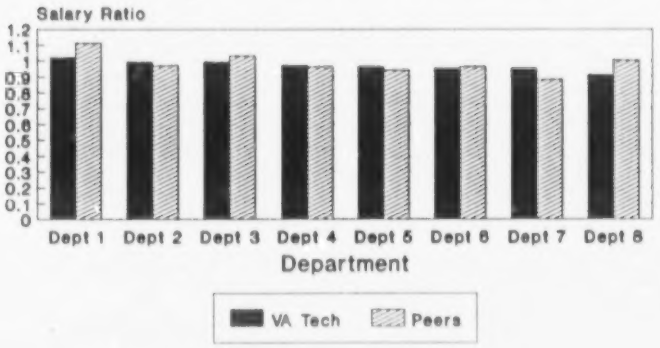
As would be expected, the ratios in the Beginning Assistant to Associate graph are all somewhat less than those in the Beginning Assistant to Assistant graph. This is not to say that it would be impossible to obtain a ratio of beginning assistant to associate salaries that was greater

Figure 1

Salary Ratios for College A

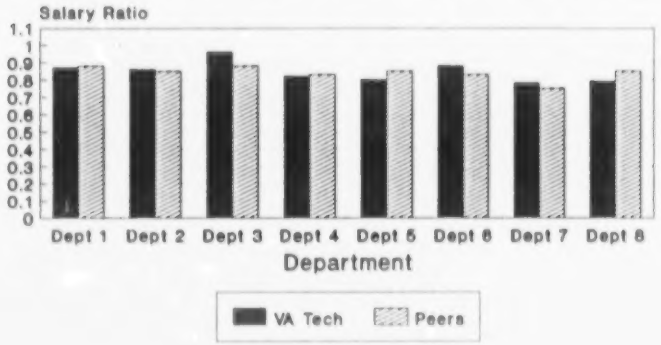
Fall 1989

Beginning Assistant to Assistant



No new hires occurred in Department 9, 10, or 11 during 1988-89 or 1989-90. Peer ratios for these departments were 1.00, 0.98, and 0.93 respectively.

Beginning Assistant to Associate



No new hires occurred in Department 9, 10, or 11 during 1988-89 or 1989-90. Peer ratios for these departments were 0.83, 0.83, and 0.80 respectively.

than that of beginning assistant to assistant salaries. In fact, department three on the Beginning Assistant to Associate graph shows some cause for concern since the ratio for Virginia Tech approaches one and is very close to the ratio found in the same department in the Beginning Assistant to Assistant graph.

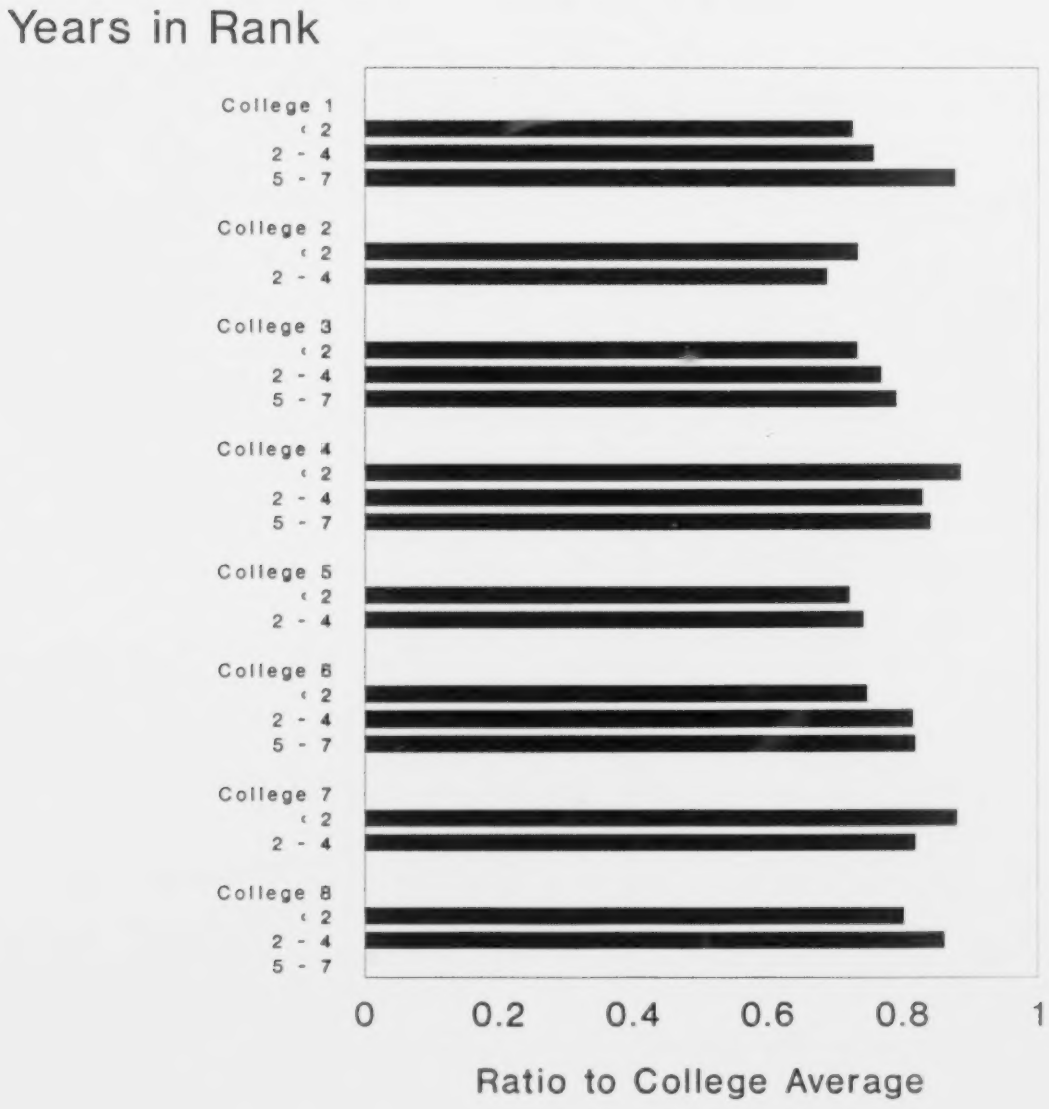
Inferential statistical procedures could also be used to compare a given institution with its peers. However, some of the simplest procedures are the most useful. A 't' test could be used to compare the Virginia Tech ratio to that of the peer institutions to determine whether or not Virginia Tech differed significantly from the other institutions. In addition, ANOVA (or MANOVA) could be used to evaluate whether ratios differed significantly across colleges or across departments within a given college. Statistical results should be viewed as descriptive and be used with caution due to issues of normality, weighting, and representativeness.

Phase Two: Internal Consistency

The salary ratios calculated in the previous section to address the issue of external consistency can also be used to address the issue of internal consistency across departments or colleges. However, a more detailed level of analysis can be performed when one is not limited to the data that is available for peer institutions. For example, the previous comparison was limited to rank/discipline analysis because limited information was available on time in rank. It would seem appropriate to take a closer look to see if salary compression occurs within ranks. It would also be interesting to look at trends in salary compression over time.

To get a clearer picture of where compression might exist, one can graph standardized average salaries by time in rank within college. Figure 2 gives an example of this comparison for assistant professors. The data for each college is standardized by dividing the average salaries for those with a given number of years of experience by the overall average faculty salaries for each college. This presentation gives an impression that there is cause for concern in colleges two, four, and seven. In all three of these colleges, faculty with less experience at a given rank are receiving higher salaries than their more senior colleagues in the same rank. Colleges one and three depict situations where

Figure 2
1989 Assistant Professor Salaries As Ratio To College Average



salary compression does not exist in that the more senior faculty receive a higher average salary than that received by those faculty with less time in the given rank.

With the recent emergence of salary compression as an issue, it is appropriate to determine if the current condition at a given institution is comparable to what has existed in the past. Figure 3 shows that at the university level, junior assistant professor salaries have tended to be about 80 percent of the associate professor salaries. This graph highlights a cause for concern with colleges four and seven because these colleges exhibit an increase in salary compression. On the other hand, information on college six shows that problems which existed in 1983-84 have become less serious over time.

Inferential statistics similar to those discussed in the section on external consistency can be used for diagnosing internal consistency. However, the same cautions mentioned previously apply.

Dealing with Salary Compression:

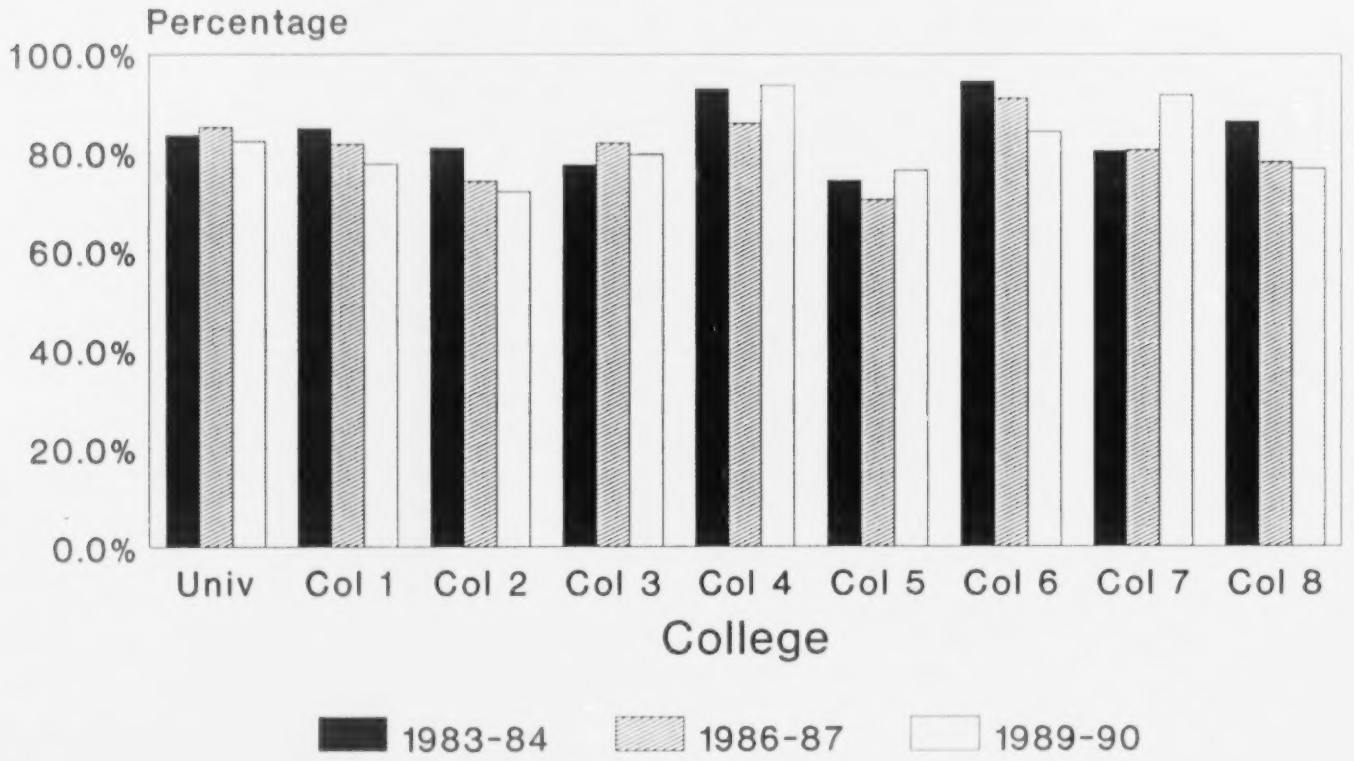
While the preceding section concentrated on diagnosing salary compression or determining whether or not salary compression exists, this section concentrates on ways of addressing salary compression. In particular, it looks at methods used by university provosts to combat salary compression and one way to estimate the cost of solving the salary compression problem.

Provost Survey

A group of ten provosts at major research universities across the nation were called and questioned on the issue of salary compression. All of the provosts contacted indicated that salary compression was a problem. Salary compression was found to be most common in business, engineering, and the hard sciences. Some of the provosts who had been dealing with salary compression for a number of years felt the problem was under control. Others were stymied.

Figure 3

Salary Compression Analysis
Asst Prof (<2) Salary as % of Assoc



The most common solution to salary compression was to allocate more funds for salary inequities. This normally took the form of a lump-sum allocation from the provost to the deans. In most cases, it was up to the deans to distribute the funds. In a few cases, deans were asked to submit a list of salary inequities. The provost then reviewed the list and granted requests on an individual by individual basis. In all cases it was understood that the allocation was meant to address salary compression issues, and that provost office personnel would review the use of the funds. Other activities used to combat salary compression that involved increased funding were to increase awards for promotions in rank, set salary floors, allow deans to increase the salary base of their colleges by permanently reducing the discretionary funds allocated to the deans, promote more rapidly, and increase travel funds as an alternative form of compensation.

Activities used to battle salary compression that were not monetary in nature included requesting that only new graduates be hired, eliminating less important specialties, limiting enrollment, and obtaining more named professorships (these are at least partially funded through external sources). In at least two cases, the respondent indicated that nothing was being done to lessen salary compression largely due to lack of funding. One institution indicated that the problem was so extreme in a given college that there had actually been talk of eliminating the college altogether!

Estimating the Cost

The specific method used to estimate 'the amount it would cost to fix salary compression' depends on how one defines 'fixed.' One of the simpler criteria would be to consider 'fixed' to mean that on the average, assistant professors with two to four years and four to six years experience earned as much as their colleagues with less than two years experience. This comparison was performed for Virginia Tech at the discipline level and resulted in an estimated need of about $100,000. If situations which involve only one faculty member in a given category are ignored, then the cost fell to approximately $20,000. It should be noted that this calculation addressed only one aspect of compression and did not consider compression of associate professor salaries. It should also be noted that 'merit' was not considered and that some of the compression may have been consistent with university policies. The method has value in that it deals with the most common

definition of compression which is relating entering assistant professor salaries to those of the same rank with more time at the institution.

Discussion

While it might be assumed that the colleges with the most severe salary compression problems make the most noise, this is not always the case. Internal analyses show that the most extreme cases of salary compression can occur in unexpected areas. External analyses show that while compression problems may exist, they were of a lesser magnitude than that experienced by institutions that make up the external sub-market. It is important to analyze the magnitude of the situation both internal and external to the campus before starting a precedent by dousing what appears to be an isolated fire only to find out that a real blaze exists elsewhere. It is also important to realize that there are many ways to measure salary compression and that the implications for solutions are somewhat influenced by the measurement used.

Some precautions are warranted when dealing with salary ratios. Where there are low numbers of new hires that are commanding higher salaries, compression will very likely exist. Therefore, it is important to consider the number of salaries contributing to the average for new hires and existing faculty. The compression problem may be overstated when there are only one or two salaries contributing to an average. Areas where there is a high demand and low supply will tend to exhibit salary compression. This is a fundamental fact of economics. A fact which can be put into perspective if one uses external data.

It is also important to note that some salary compression is expected because there will always be over- and under-achievers in every rank. To the extent that junior faculty members continue to be aggressive at winning research grants and publishing they will compete for salary increases with more senior faculty. Care should be taken so as to avoid negative reinforcement of these characteristics. Because of this, all of the strategies that are presented in this paper should be viewed only as an initial means to assess salary compression. Once an area is highlighted as a potential problem, care should be taken to review all of the varying factors that might justify the salary

inequities. Some of these factors might be number of citations and publications, research awards, and teaching expertise. Obviously, these factors will vary from institution to institution.

Conclusion

Given that salary compression has only recently received publicity, it is not surprising to note that a need exists for additional research on the topic. Determining what strategies are most effective in addressing salary compression will be a key issue for many administrators. Selecting appropriate measures will be another critical issue. This preliminary review of compression indicates that combative strategies fall on a continuum from no action to very specific actions such as setting salary floors. In addition, the amount of autonomy permitted to address the problem varies greatly. On one hand, the deans may retain total autonomy to meet the situation; on the other hand, some provosts may require review of each application of funds at the specific faculty member level. Future research questions should include the amount of money appropriate for various strategies and the impact of various strategies on salary stability across the campus.

Salary compression has existed for a number of years and is expected to worsen (Blum, 1989). This paper proposes methods that may be used to identify salary compression that are based on the findings of McLaughlin *et al.* (1979) and Braskamp and Johnson (1978). Once it is determined that compression exists and is of a magnitude that could result in morale problems, it is imperative that each case be reviewed for legitimacy. Because merit pay is so common (Stohm, 1988), merit is a viable explanation for salary compression and should be reviewed to explain unexpected variations in salaries. The University of Maryland, College Park (1989) has built this type of review into their salary review process. Remedies vary for combatting unexplainable salary compression. The most common solution is to address the situation with more funds. It is important that individuals trying to combat salary compression realize that it will require *time, money, cooperation, and creativity*. Above all it requires an analytical and rational approach to faculty pay - a topic of personal interest to all faculty.

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